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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/611,556	07/02/2003	Laure Simonot	033818-003	6002

7590 01/13/2006

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EXAMINER

RONESI, VICKEY M

ART UNIT	PAPER NUMBER
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1714

DATE MAILED: 01/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/611,556

Applicant(s)

SIMONOT ET AL.

Examiner

Vickey Ronesi

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 October 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,4-18,21-33,36-48 and 51-80 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,4-18,21-33,36-48 and 51-80 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

DETAILED ACTION

1. Please note that the examiner of record has been changed. The new examiner is Vickey Ronesi.
2. All outstanding rejections of record are withdrawn in view of applicant's amendment with arguments filed 10/18/2005 and examiner's reconsideration of the outstanding rejections.
3. Upon an updated and search and a fresh consideration of the application, new grounds of rejection are set forth below. Thus, *a 2nd non-final Office action is set forth as follows.*
4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior office action.

Claim Rejections - 35 USC § 103

5. Claims 1, 4-18, 21-33, 36-48, 51-64, 67, 68, 71, 72, 75, 76, 79, and 80 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang et al (US 6,469,089).

Wang et al discloses an elastomeric composition for use in tires (col. 8, line 13) comprising elastomeric component such as the diene rubbers listed in col. 4, line 15 to col. 5, line 5, including exemplified styrene-butadiene and polybutadiene (col. 8, Table 1); 1-60 phr of a wet skid enhancing filler having a BET surface area of less than 100 m²/g such as exemplified silicon carbide (col. 3, lines 41-57; col. 8, Table 1; col. 10, Table 5); at least 20 phr of a second filler such as silica, alumina, or carbon black (col. 5, lines 35-62; col. 7, lines 24-26); and a coupling agent, e.g., bis(triethoxypropyl)tetrasulfide (col. 7, lines 5-16). Note table 2 in col. 9 which discloses method of mixing at 100°C and making tire treads.

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With respect to claims 16, 17, 63, and 64, see the discussion set forth in paragraph 4 of Office action mailed 4/19/2005.

Wang et al fails to disclose the particle size or disagglomeration rate of the silicon carbide.

With respect to the particle size, Wang et al fails to disclose the particle size of the silicon carbide, nevertheless, given that particle size is dependent on surface area and given that Wang et al exemplifies silicon carbides which have BET surface area that fall within the scope of the present claims (e.g., $31.9 \text{ m}^2/\text{g}$ and $55.9 \text{ m}^2/\text{g}$), it is intrinsic that the silicon have an average size between 10 and 350 nm.

With respect to the disagglomeration rate, it is considered that Wang et al's silicon carbide exhibits the presently claimed disagglomeration rate since such a property is evidently dependent on the material's surface area and chemical composition which determines hardness and thus disagglomeration rate.

Wang et al defines the second filler as a "reinforcing" filler and distinguishes between "wet skid enhancing" fillers and "reinforcing" fillers, it is the examiner's position that the silicon carbide taught by Wang et al is intrinsically a reinforcing filler (the present disclosure even teaches such), regardless of how Wang et al defines it, and that the presently claimed vol % relative amounts of silicon carbide filler and other filler are clearly met by Wang et al (e.g., when the composition comprises 60 phr of silicon carbide and up to 60 phr of the second filler—*note*: assuming approximate densities of about 3 g/cm^3).

In light of the above discussion, it would have been obvious to one of ordinary skill in the art to utilize the teachings by Wang et al obtain a rubber composition reinforced with a silicon

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carbide given that the silicon carbide intrinsically provides for the reinforcement capabilities as shown above in any of the amounts taught by Wang et al and thereby arrive at the presently cited claims.

6. Claims 1, 4-18, 21-33, 36-48, and 51-80 are rejected under 35 U.S.C. 103(a) as being unpatentable over Visel et al (US 6,121,346) in view of Ciullo et al (from the book, *The Rubber Formulary*).

Visel et al discloses a rubber composition for use in a tire tread (col. 8, lines 57) comprising a rubber such as SSBE (col. 3, lines 10-15) having bound styrene content of 5-50 or a cis-1,4-polybutadiene having cis content greater than 90 % (col. 3, lines 27-37); 1-250 phr of a reinforcing filler comprising 1-30 wt % small particles and 70-99 wt % of large particles having a diameter of 17-500 nm (e.g., silicon carbide having diameter from 5-150 nm, see col. 5, lines 9-11); and a coupling agent such as bis(triethoxy silylpropyl) tetrasulfide (col. 6, lines 65-67). See col. 8, lines 22-65 for method of mixing steps with a mixing temperature between 140-190 °C.

While Visel et al fails to specifically disclose a combination of silicon carbide as the large particle and at least one of carbon black, alumina, or silica as the small particle, it is the examiner's position that given that Visel et al clearly provides for an embodiment with silicon carbide as the large particle as discussed above, it would have been obvious to one ordinary skill in the art to combine the silicon carbide with any one of the other recited filler particles as the small filler, including carbon black and silica (col. 3, lines 63-64). Note that the presently claimed relative amounts of silicon carbide (i.e., in phr and vol %) are met when the amount of

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total reinforcing is greater than about 50 phr and the large particle is silicon carbide (with respect to vol %, equal approximate densities of about 3 g/cm³ used). Therefore, the relative amounts taught by Visel et al overlap in scope with the presently claimed amounts for both silicon carbide and additional reinforcing filler.

Additionally, Visel et al fails to disclose the surface area or the disagglomeration rate of the reinforcing silicon carbide.

With respect to the surface area, it is the examiner's position that the surface area of a filler particle is a critical parameter when determining its reinforcing effects and therefore it would have been well within the capabilities of one of ordinary skill in the art to use a suitable surface area to obtain a filler with reinforcing effects having a surface area which falls within the presently claimed range of 20-200 m²/g. Evidence to support the examiner's position is found in Ciullo et al which discloses fundamental rubber/filler interactions and teaches that in order for a filler to reinforce rubber, two very important factors are the particle size and surface area (pages 27 and 32). Ciullo et al further teaches that truly reinforcing fillers have a particle size of 10-100 nm (page 26)—like the silicon carbide particles of Visel et al—and that surface area is the inverse of particle size (page 27). Preferred surface areas for spherical particles include 125-200 m²/g for silica (page 28) which can be inferred in the silicon carbide of Visel et al.

With respect to the disagglomeration rate, it is considered that Visel et al's silicon carbide exhibits the presently claimed disagglomeration rate since such a property is evidently dependent on the material's surface area and chemical composition which determines hardness and thus disagglomeration rate.

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Given that Visel et al discloses a reinforced rubber composition which would intrinsically have a reinforcing effect and further given that surface area is directly related to particle diameter, it would have been well within the capabilities of one of ordinary skill in the art to utilize a silicon carbide reinforcing filler with suitable surface area as taught by Ciullo et al and thereby arrive at the presently cited claims.

Response to Arguments

7. Applicant's arguments with respect to the claims have been considered but are moot in view of the new grounds of rejection set forth above.

Contact Information

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vickey Ronesi whose telephone number is (571) 272-2701. The examiner can normally be reached on Monday - Friday, 8:30 a.m. - 5:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on (571) 272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR

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system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

1/6/2006

vr



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